

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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REC'D 16 MAR 2005	
PCT	
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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/020981

International filing date (day/month/year)
29.06.2004

Priority date (day/month/year)
01.07.2003

International Patent Classification (IPC) or both national classification and IPC
G06F13/00, H04N1/00

Applicant
POLAROID CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/020981

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/020981

Box No. II Priority

1. ☒ The following document has not been furnished:
- ☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).
 - ☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).
- Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
4. Additional observations, if necessary:

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
 - ☒ paid additional fees under protest.
 - ☐ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☒ all parts.
 - ☐ the parts relating to claims Nos.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/020981

**Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or
Industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-28, 32-35, 38-41
	No: Claims	29-31, 36-37
Inventive step (IS)	Yes: Claims	11-28, 32-35, 38-41
	No: Claims	1-10, 29-31, 36-37
Industrial applicability (IA)	Yes: Claims	1-41
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item IV.

1. The present application relates to high speed digital image printing, and to the problem of ensuring a continuous image data throughput to the printer in order to ensure that all the images of an input set can be printed without stopping and restarting the printing unit. Such a stop and restart may occur when the time necessary to digitally process the input images (eg. for tonal correction) is longer than the time necessary to print out the processed data. Especially when the printing unit is a thermal printer, it is desirable to avoid working interruptions of the printing unit, since this would increase the printing time. The description discloses several measures which can be taken to ensure a continuous data throughput and so reduce the risk of interruption of the printing operation. Although all the disclosed measures can be used in combination with one another, it is clear that any of these measures can be applied alone independently of the other ones. This fact is reflected by the application comprising a number of independent claims, each one specifying only one of these measures, but being followed by dependent claims specifying a combination of the other measures, as well as by the presence of independent claims specifying various combinations of these measures together.

The fact that some claims define a combination of these different measures does not solve the problem that other claims define only one of these measures independently from the other ones, and so do not fulfil the requirement of unity of the invention.

2. The features common to all the independent claims 1, 6, 7, 11, 21, 22, 29, 35, 36, 41, that is, a method and system for printing digital images, with a print client for sending images to a print server over a communication bus, a memory means for storing and retrieving the images at the print server, and means for printing the retrieved images, is already known from US 2002/191066 (see paragraphs [0028], [0105] and [0107]). The remaining features of the claims relate to different technical contributions to the problem of ensuring a continuous data throughput to the printing unit, according to the following:-
 - a) Claims 1, 6 and 7 specify that the memory means is in the form of a RAMdisk, which feature solves the problem of providing a memory with fast access time

for retrieving the images at the print server (see description, page 26, lines 3-13). Dependent claims 2-5 and 8-10 also belong to this group.

- b) Claims 11 and 22 specify means for processing all the images in an order selected according to the estimated time necessary for processing each image, which helps ensuring that the processing unit keeps up with the printing unit (see description, pages 24, line 26 to page 25, line 3) once images requiring a longer time are processed first. Dependent claims 12-20, 23-28, 32-34, 38-39 and independent claims 21, 35 and 41 can also be searched within this group, since they also specify the feature of sorting the images according to processing time.
- c) Claim 29 specifies means for processing the images in subsets of images, which is a second alternative of ensuring that the processing unit keeps up with the print engine and so stopping and restart of the print engine is avoided (see description, page 18, lines 20-31), as soon as the printing unit is started only after a first subset of images has been completely processed and transferred to the print server, thus leaving time for the print client to process a second subset of images while the first one is printed. Dependent claims 30-31 belong also to this group.
- d) Claims 36-37 specify first and second processing and printing means, to process and print respective first and second sets of images, which increases the printing speed by using plural processing and printing units which share the workload.

Therefore, the above four groups of claims do not share a common or corresponding special technical feature which would link them so as to form a single general inventive concept (Rule 13.1 and 13.2 PCT). This finding is not changed by the fact that some dependent claims of one group of inventions specify features particular to another group of inventions, nor by the fact that a last independent claim (ie. claim 41) specifies almost all of the features of the previous claims.

Re Item V.

The following documents are referred to in this communication:

D1: US 2002/191066 A
D2: EP 0 939 359 A
D3: US 6 208 429 B
D4: EP 1 137 247 A
D5: EP 0 933 679 A
D6: US 6 157 459 A
D7: US 6 104 468 A

Comments on the claims relating to the first invention

1. Document **D1**, from the applicant himself, discloses a system for printing digital images, comprising:-
 - i. A communication bus (implicit in any client/server communicating devices, see eg. paragraph 95);
 - ii. means for receiving and storing a plurality of digital images over the communication bus (see paragraphs 95 and 107, "dynamically stored data 511");
 - iii. means for retrieving and printing the digital images (paragraph 1007).
2. Therefore, the sole feature distinguishing the subject-matter of **claim 7** from the prior art is that the storing means is in the form of RAMdisk.

This feature cannot be regarded as inventive (Art. 33(3) PCT) since the use and advantages of a RAMdisk for temporary (dynamically) storing data are well known in the computer technology (see **D2**). Document **D3** discloses a digital images printing system (see abstract) wherein part of the computer memory storing the digital images is configured as a RAMdisk (see fig. 4 and column 4, lines 17-27).

Therefore, it would be obvious to configure also the dynamical storage means of **D1** as a RAMdisk.

3. The system of **D1** manifestly works according to the method of **claims 1 and 6**, which, hence, are not inventive either (a print client being disclosed in paragraph 95 of **D1**, retrieving the image data in the order as they have been submitted and deleting no longer necessary data from the RAMdisk would be extremely obvious; **D1** does not mention that the print engine is stopped and restarted during the printing, and the skilled person would clearly consider not desirable to stop and restart the printing engine).
4. The remaining claims 2-5 and 8-10, defining features already mentioned in at least some of the independent claims 1, 6, or 7, are not inventive either.

Comments on the claims relating to the second invention

5. Document **D4**, discloses a computer-implemented method of printing a plurality of images (see abstract), comprising the steps of:-
 - i. Receiving at a CPU and digitally processing a set of digital images (paragraph 36);
 - ii. selecting an order in which the digital images are to be printed basing on the time necessary to print the images, so as to permit an efficient use of the output device (paragraph 37-38 and 28),
 - iii. retrieving (at a printing station) the digitally processed images in the selected sequence (paragraph 43, 45); and
 - iv. printing the images in the selected sequence (paragraph 41).

However, **D4** does not disclose nor seem to suggest the steps of:

- a. estimating the time necessary to **digitally** process each of the images; and

- b. select an order in which the images are digitally processed based on the above mentioned estimated time.

The above steps are neither suggested by any of the other available prior art documents.

These distinguishing steps ensures that the processing unit keeps up with the printing unit once images requiring a longer processing time are processed first, so that interruptions or idle time of the printing unit are avoided.

Therefore, independent **claims 11, 21, 22, 35 and 41**, along with their dependent claims can be regarded as involving an inventive step (Art. 33(3) PCT).

Also **claims 32-34 and 38-40**, can be regarded as inventive, since they include the above mentioned distinguishing steps a) and b), although they refer to claims 29 and 36, respectively, which belong by themselves to the third and fourth invention.

Comments on the claims relating to the third invention

- 6. Document **D5** discloses a computer implemented method of printing a plurality of digital images (see abstract), comprising the steps of:-
 - i. performing image processing on a first set of images including fewer than all of the images (see the "second order" in column 11, lines 11-22);
 - ii. activating a print engine and printing said first set of processed images (implicit in the passage in column 11, lines 21-23)

Therefore all the steps of **independent claim 29** are already known from **D5** (Art. 33(2) PCT).

- 7. The above objection can be based also on **D6** (column 2, line 46 to column 3, line 8 and the figure) disclosing that input images are sorted according to the requested print size before being sent to the printing engine.

- 8 **D5** manifestly discloses also the steps of dependent **claims 30-31** (see paragraph 35, in particular the passage in lines 41-48) which, hence, are not novel either.

Comments on the claims relating to the fourth invention

9. Document **D7** discloses a system for printing a plurality of digital images (see abstract), comprising a plurality of image processors (column 5, lines 50-61) each arranged to process a subset of the input images (column 2, lines 48-57 and column 7, lines 33-59), and a plurality of printers, arranged to print images processed by a respective processor (column 6, lines 1-11 and 22-26).

It is manifest that this subject-matter anticipated that of independent **claim 36** and dependent **claim 37**, which, hence, lack of novelty (Art. 33(2) PCT).

Re Item VIII.

The use of plural independent claims 1, 6, 11, 21, 22, 35 and 41 in the same category and for the same invention does not meet the requirement of conciseness of Art. 6 PCT.